

What is Claimed is:

1. A multi-type air conditioner comprising:

an outdoor unit having a compressor, an outdoor heat exchanger, a flow path control valve for controlling a flow path of the refrigerant from the compressor, and an outdoor unit piping system;

a plurality of indoor units each having an indoor expansion device, an indoor heat exchanger, and an indoor piping system;

a distributor for selectively distributing the refrigerant from the outdoor unit to the indoor units and returning to the outdoor unit again proper to respective operation modes; and

noise preventing means on pipelines respectively connected to the indoor units to cut off refrigerant flow into inoperative indoor units when the air conditioner is in operation, for preventing occurrence of refrigerant flow noise at the inoperative indoor units.

2. The multi-type air conditioner as claimed in claim 1, wherein the noise preventing means includes a first valve on a pipeline connected to the indoor heat exchanger for cutting off supply of the refrigerant to the inoperative indoor unit.

3. The multi-type air conditioner as claimed in claim 1, wherein the noise preventing means includes a second valve on a pipeline connected to the indoor expansion device for cutting off supply of the refrigerant to the inoperative indoor unit.

4. The multi-type air conditioner as claimed in claim 1, wherein the noise preventing means includes an indoor expansion device having a system which can be closed to cut off refrigerant supply to the inoperative indoor unit.

5. The multi-type air conditioner as claimed in claim 2, wherein the noise preventing means includes a second valve on a pipeline connected to the indoor expansion device for cutting off supply of the refrigerant to the inoperative indoor unit.

6. The multi-type air conditioner as claimed in claim 2, wherein the noise preventing means further includes the indoor expansion device having a system which can be closed to cut off refrigerant supply to the inoperative indoor unit.

7. The multi-type air conditioner as claimed in claim 1, further comprising bypass means for the refrigerant staying in the pipeline connected to the indoor expansion device to bypass the inoperative indoor unit.

8. The multi-type air conditioner as claimed in claim 7, wherein the bypass means includes;

a bypass pipe connecting two pipelines connected to make the refrigerant to flow in/out of each of the indoor units, and

a bypass valve on the bypass pipe for opening/closing the bypass pipe.

9. The multi-type air conditioner as claimed in claim 8, wherein the bypass valve has a sectional flow passage area smaller than the flow sectional area of the bypass pipe, for bypassing minimum refrigerant.

10. The multi-type air conditioner as claimed in claim 1, wherein the flow path

control valve includes;

- a first port in communication with an outlet of the compressor,
- a second port in communication with the outdoor heat exchanger,
- a third port in communication with an inlet of the compressor, and
- a fourth port blanked, or connected to a closed pipe piece.

11. The multi-type air conditioner as claimed in claim 10, wherein the outdoor piping system includes;

- a first pipeline connected between the outlet of the compressor and the first port,
- a second pipeline connected between the second port and the first port of the outdoor unit having the outdoor heat exchanger mounted in the middle thereof,
- a third pipeline connected between the first pipeline and the second pipeline of the outdoor unit, and
- a fourth pipeline connected between the third port and the inlet of the compressor having a middle part connected to the third port of the outdoor unit.

12. The multi-type air conditioner as claimed in claim 11, wherein the outdoor unit further includes an accumulator on the fourth pipeline between the third port of the outdoor unit and the inlet of the compressor.

13. The multi-type air conditioner as claimed in claim 11, wherein the outdoor unit further includes;

- a check valve on the second pipeline between the outdoor heat exchanger and the first port of the outdoor unit, and

an outdoor expansion device mounted on the second pipeline in parallel to the check valve.

14. The multi-type air conditioner as claimed in claim 11, wherein the check valve only permits refrigerant flow from an outdoor heat exchanger side to a first port side.

15. The multi-type air conditioner as claimed in claim 11, wherein the first port of the outdoor unit is connected to the first port of the distributor, the second port of the outdoor unit is connected to the second port of the distributor, and the third port of the outdoor unit is connected to the third port of the distributor.

16. The multi-type air conditioner as claimed in claim 15, wherein the distributor includes;

a distributor piping system for guiding refrigerant from the outdoor unit to the indoor units, and from the indoor units to the outdoor unit, and

a valve bank on the distributor piping system for controlling the refrigerant flowing in the distributor piping system proper to respective operation modes.

17. The multi-type air conditioner as claimed in claim 16, wherein the distributor piping system includes;

a liquid refrigerant pipeline having a first port of the distributor,

a plurality of liquid refrigerant branch pipelines branched from the liquid refrigerant pipeline and connected to the indoor unit expansion devices in the indoor units respectively,

a gas refrigerant pipeline having a second port of the distributor,

a plurality of first gas refrigerant branch pipelines branched from the gas refrigerant pipeline and connected to the indoor heat exchangers of the indoor units respectively,

a plurality of second gas refrigerant branch pipelines branched from the first gas refrigerant branch pipelines respectively, and

a return pipeline having all the second gas refrigerant pipelines connected thereto, and a third port of the distributor.

18. The multi-type air conditioner as claimed in claim 17, wherein valve bank includes a plurality of open/close valves mounted on the first and second gas refrigerant branch pipelines.

19. The multi-type air conditioner as claimed in claim 18, wherein the distributor further includes means for preventing liquefaction of the refrigerant discharged from the compressor and filled in the third pipeline fully.

20. The multi-type air conditioner as claimed in claim 19, wherein the means for preventing liquefaction includes;

a bypass pipe connected between the return pipeline and the gas refrigerant pipeline, and

a distributor expansion device on the bypass pipe.

21. A multi-type air conditioner comprising:

an outdoor unit having a compressor and an outdoor heat exchanger;

a plurality of indoor units each connected to the outdoor unit and having an indoor

expansion device and an indoor heat exchanger;

noise preventing means on pipelines connected to respective indoor units for cutting off refrigerant flow into inoperative indoor units to prevent occurrence of refrigerant flow noise at the inoperative indoor units; and

bypass means on pipelines respectively connected to the indoor units for the refrigerant caused to stay by the noise preventing means to bypass the inoperative indoor unit.

22. A multi-type air conditioner as claimed in claim 21, wherein the noise preventing means includes;

a first valve on a pipeline connected to the indoor heat exchanger, for cutting off refrigerant flow to an inoperative indoor unit, and

a second valve on a pipeline connected to the indoor expansion device, for cutting off refrigerant flow to the inoperative indoor unit.

23. A multi-type air conditioner as claimed in claim 21, wherein the noise preventing means includes;

a first valve on a pipeline connected to the indoor heat exchanger, for cutting off refrigerant flow to an inoperative indoor unit, and

an indoor expansion device having a closable system for cutting off refrigerant flow to the inoperative indoor unit.

24. A multi-type air conditioner as claimed in claim 21, wherein the bypass means includes;

a bypass pipe connecting two pipelines connected to make the refrigerant to flow

in/out of each of the indoor units, and

a bypass valve on the bypass pipe for opening/closing the bypass pipe.

25. The multi-type air conditioner as claimed in claim 24, wherein the bypass valve has a sectional flow passage area smaller than the flow sectional area of the bypass pipe, for bypassing minimum refrigerant.